

Art Unit: 2800

Clmpto

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1. (Currently Amended) A Group III nitride semiconductor light-emitting element including an n-type contact layer of n-type GaN, an n-type clad layer of n-type $\text{Al}_x\text{Ga}_{1-x}\text{In}_y\text{N}$ ($0 \leq x \leq 1, 0 \leq y \leq 1, 0 \leq x+y \leq 1$) $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0 \leq x \leq 1$), an active layer, a p-type clad layer, and a p-type contact layer, comprising:

a crack-preventing layer of n-type GaN provided between the n-type contact layer and the n-type clad layer,

wherein the crack-preventing layer has a dopant concentration lower than that of the n-type contact layer.

2. The light-emitting element according to claim 1, wherein the crack-preventing layer has a dopant concentration lower than $4 \times 10^{18} \text{ cm}^{-3}$.

3. The light-emitting element according to claim 2, wherein the crack-preventing layer has a dopant concentration within a range of $5 \times 10^{16} \text{ cm}^{-3}$ to $5 \times 10^{17} \text{ cm}^{-3}$.

4. The light-emitting element according to claim 1, wherein the n-type contact layer has a dopant concentration within a range of $4 \times 10^{18} \text{ cm}^{-3}$ to $2 \times 10^{19} \text{ cm}^{-3}$.

5. The light-emitting element according to claim 1, wherein a dopant of the crack-preventing layer is either one of Si and Ge.

6. The light-emitting element according to claim 1, wherein a dopant of the n-type contact layer is either one of Si and Ge.

7. (Currently Amended) A method of manufacturing a semiconductor light-emitting element having a multilayered structure constituted by sequentially stacking layers of Group III nitride semiconductors one upon another on a substrate, the method comprising:

an n-type contact-layer forming step of forming an n-type contact layer of n-type GaN,
and

a crack-preventing layer forming step of forming a crack-preventing layer of n-type GaN,
the crack-preventing layer having a dopant concentration lower than that of the n-type contact layer, and

a clad-layer forming step of forming an n-type clad layer of n-type $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0 < x < 1$) on the crack-preventing layer.

8. The method according to claim 7, wherein the crack-preventing layer forming step includes a step of reducing an amount of supply of a dopant material used in the n-type contact-layer forming step.